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KOPIO test in D6

A brief description of the KOPIO test in the D6 beam line was distributed to the committee by D. Lazarus (see attachment 1). Using time of flight and calorimeters in the D6 beam line the experiment will measure the extinction of the micro-bunched 25 GeV beam. The desired primary beam intensity is 1TP on target and a pbar beam of 10^4 particles per pulse. The cycle rate will be approximately 5 seconds.

The experiment will operate with all the normal conditions previously used for D6 operations with several approved changes.

The beam intensity in the AGS will be limited to 2.5 TP with the A20 transformer and the keep alive signal must function. **(CK-fy2004-D-360).**

Excursions in the secondary beam intensity will be prevented by an interlocking chipmunk (trip level of 2 mrem/hr), which will detect the scattered radiation from the experimental calorimeter modules. **(Ck-fy2004-D6-361).** A. Etkin and D. Beavis reviewed a fault study from the commissioning of the D6 beam line, which demonstrates that this method will limit the beam to 10^7 per spill

The existing chipmunk can be moved upstream of its usual location. This will substitute for the dual NMC units, which have been used in the past.

The calorimeter modules must be locked in place or the beam line RS LOTOed off. **(Ck-fy2004-D6-362).**

The 48D48 will be RS LOTOed off. **(Ck-fy2004-D6-363).**

D6D1 is to be RS LOTOed in negative polarity. **(Ck-fy2004-D-364)** If the D6 line is operated in positive polarity, then the dual F10 current limit must be set for a min. of 22. GeV **(Ck-fy2004-D-365)**

The in-beam hazard with normal pbar operations is expected to be 18 mrem/hr. The pion beam can have an excursion 1000 times higher. This is based on the minutes of Dec. 28, 1990.

The RCT's will survey the area. It is not expected that the area outside the building will require posting changes at this low beam intensity. The experimenter's will setup electronics along the area fence. The location should be on the east side and chosen to reduce dose to as low as possible. If necessary, an RWP will need to be issued if the expected dose to an individual will exceed 20 mrem or 20 mrem for the all users.

ATLAS Test in the D line

ATLAS would like to expose a small test cell containing HV electrodes and liquid argon to a low energy beam. The purpose of the test is to study, which reaction products stay in solution and which attach to the wall and electrodes (see attachment 2).

The experiment had requested a 2 GeV beam of intensity 1 TP on the test cell for 1 hour. Large losses are expected for a primary beam of 2 GeV and therefore the energy has been increased to 8GeV. Beam optics and expected losses for this test must be given to a subcommittee before this test is to operate. **(Ck-fy2004-8GeV-SEB-366)**

Two options for the location of the cell have been proposed. The first is to place the cell near the location where the polarized targets were used in the past. The thin target (4-5% not including the rohacel)) does not represent an issue for the shielding at this location. However, it is not clear if the beam size at this location and energy can be satisfied. The second location was to place the cell just upstream of the D_target. The beam optics are expected to be satisfactory but if this test runs after the KOPIO test (as presently planned) the area will have too much residual activity. In either case the beam should be cleanly transported to the beam dump. The beam optics must demonstrate that the beam will hit only the intended portion of the cell at the determined location for the exposure. **(Ck-fy2004-8GeV-SEB-367)**

The D6D1 dipole must be RS LOTOed off during this test. **(Ck-fy2004-8GeV-D-368)**

Job specific RWP's must exist for the experimenters accessing the D cave and for the transportation of activated materials on site. **(Ck-fy_2004-8GeV-D-369)**

The dual F10 current limit can be set at 6 GeV for this test. **(Ck-fy2004-8GeV-SEB-370)**

The potential release of activated materials must be examined if there is a failure to the cell while it is operated in the D Cave. **(Ck-fy2004-8GeV-D-371)**

The limit on the A20 transformer will be the same as the KOPIO test, 2.5Tp. **(Ck-fy2004-8GeV-SEB-372)**

The potential to create unstable compounds in the liquid argon was not reviewed by the RSC. Either the exp. Safety committee or the accelerator safety committee should sign this off. The RSC chair will contact the committee chairmen about this issue.

SEB issues

The B cave and the A cave have jumpers in the interlocks to allow access while there is beam in the AGS. In addition, each cave has an interlocking chipmunk in the upstream section. It was decided that the jumpers should be removed before the beam is extracted. **(Ck-fy2004-SEB-373)**

The A chipmunk will be made non-interlocking during the test to prevent interlocks. **(Ck-fy2004-SEB-374)**

The alarms will be disabled for the chipmunks in both the A and B caves. **(Ck-fy2004-SEB-375)**

Attachments (file copy only):

- 1) Description of KOPIO test, D. Lazarus.
- 2) Draft Proposal to Study Liquid Argon Activation, J. Cumming et. al., March 1, 2004.
- 3) Figure of test cell provided by R. Hackenburg.

CC:

RSC
Present
RSC Minutes file
RSC D line file